

Heliotropium microspermum E.J.Thomps. (Boraginaceae), a new species from Queensland

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Summary

Thompson, E.J. (2011). *Heliotropium microspermum* E.J.Thomps. (Boraginaceae), a new species from Queensland. *Austrobaileya* 8(3): 335–339. The new species *Heliotropium microspermum* E.J.Thomps., endemic to Cape York Peninsula, Queensland, is described and illustrated.

Key Words: Boraginaceae, *Heliotropium*, *Heliotropium microspermum*, Queensland flora, taxonomy, new species

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Introduction

The genus *Heliotropium* L. comprises 84 species in Australia (Craven 1996, 2005a,b) with 43 (38 native, five naturalised) occurring in Queensland (Thompson 2010). A critical review of *Heliotropium* specimens at the Queensland Herbarium has revealed a new species for Cape York Peninsula.

Materials and methods

Morphological data were collected from dried herbarium material at BRI. Description of the new species largely follows Craven's (1996) format.

Indumentum is a useful character in Australian *Heliotropium* and is usually "composed of unicellular, simple, non-glandular hairs (the 'standard' hairs) with multicellular, simple, glandular hairs also occurring in some species. The walls of standard hairs may be smooth or ornamented" (Craven 1996). Craven (1996) refers to indumentum as having more than one class of hair when hairs can be differentiated, such as long coarse hairs and shorter fine hairs.

Mericarps are essential for identifying *Heliotropium* species and the mericarp characters used were length, commissure (side faces) pit shape and size; presence or absence of a food body in the pits; size, distribution and type of the hairs on the back; and shape of the apex. Although Craven (1996) provided

images of some mericarp indumentum types he did not present illustrations of mericarps for each species. Illustrations of mericarps are provided here for the new species and its putative allies. Other significant characters included leaf width and hair type, inflorescence characters, and plant growth form.

Taxonomy

***Heliotropium microspermum* E.J.Thomps. species nova** affinis *H. rhadinostachyum* Craven sed pilis applanatis fortuito dispositis, fovea circulari minore in mericarpiis minoribus et corolla brevior differens. **Typus:** Queensland. COOK DISTRICT: 12.3 km along Pormpuraaw Road from Gulf Development Road near Musgrave, 15 November 2010, *K.R.McDonald KRM10095* (holo: BRI).

Prostrate to ascending perennial herbs, 5–15 cm tall and to 15 cm broad. Branches moderately hairy with ascending standard hairs of one class. Adult leaves ascending, linear to narrowly elliptic, 5–13 mm long, 2–3 mm wide, base attenuate, apex acute; petiole short; abaxial surface moderately densely hairy with appressed to ascending hairs; adaxial surface with ornamented hairs, 0.7–1.2 mm long, similar to the abaxial surface only hairs tending towards more numerous along the midrib. Cyme on mature plants at anthesis straight, simple or branched, bracteate; bracts conspicuous, linear to narrowly elliptic, 2.5–4.5 mm long, touching to separated up to one length along the cymes, with ornamented hairs on adaxial surface appressed on lamina

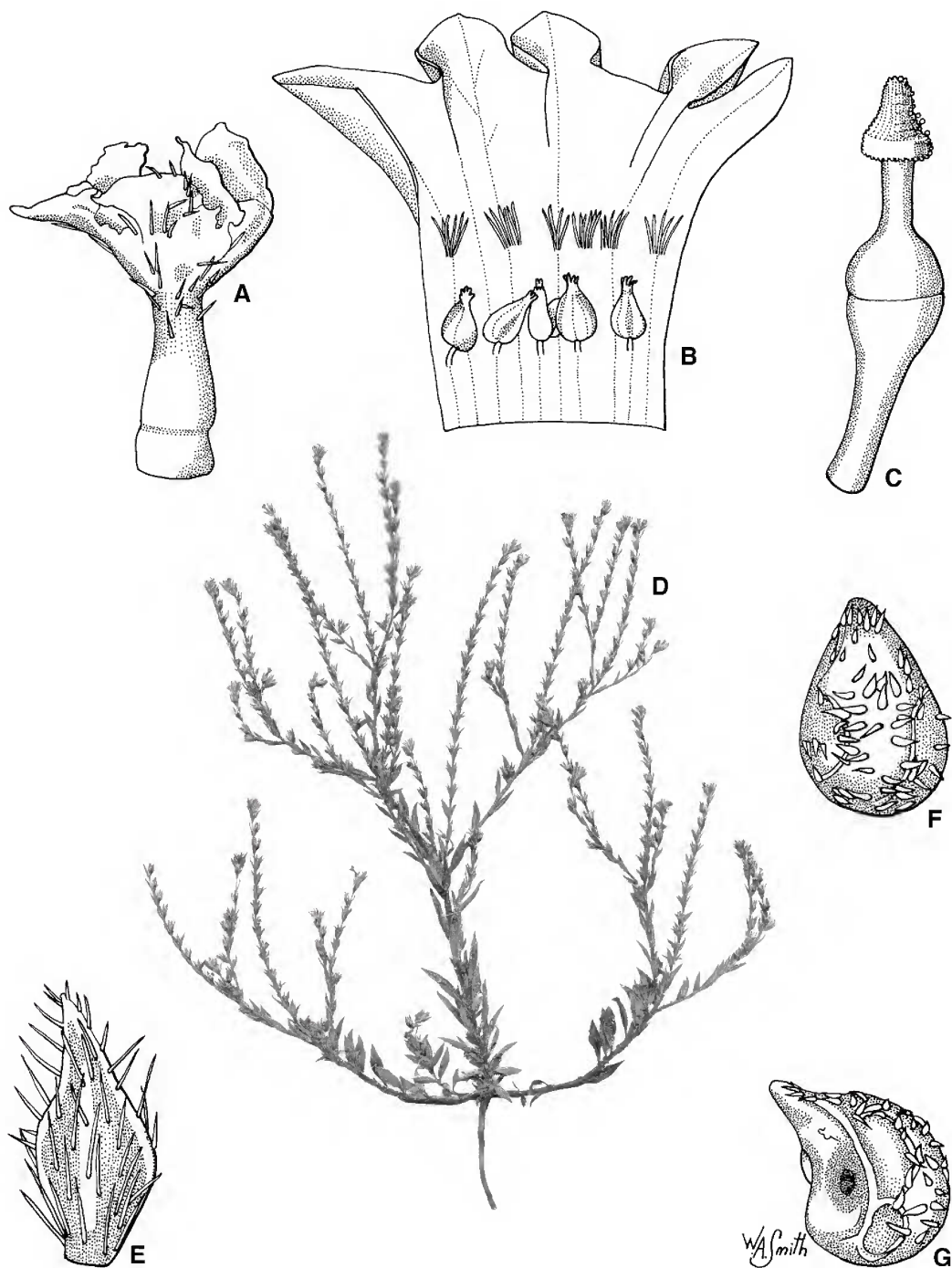


Fig. 1. *Heliotropium microspermum*. A. corolla $\times 16$. B. corolla expanded demonstrating anthers and appressed hairs in throat $\times 16$. C. pistil $\times 32$. D. plant $\times 0.6$. E. calyx $\times 16$. F. mericarp back view $\times 40$. G. mericarp side face $\times 40$. All from McDonald KRM10095 (BRI). Del. W.Smith.

and ascending on margin, abaxial surface glabrous; varying from clearly different to similar in shape and size to the leaves. Calyx lobes with ornamented hairs 0.5–0.8 mm long on the abaxial surface, appressed on the lamina and ascending on the margin, adaxial surface glabrous; outermost calyx lobe narrowly ovate, 2–2.6 mm long, acute. Corolla 2.5–3 mm long, white, tube cylindrical, not swollen around anthers at anthesis, 1.5–3 mm long, the outer surface sparsely hairy with appressed hairs, the inner surface glabrous in the throat; lobes broadly triangular, 0.7–1 mm long, apex acute. Anthers ovate, 0.3–0.5 mm long, apex acuminate, papillate. Gynoecium c. 1.6 mm long; ovary c. 0.5 mm long; style 0.5–0.7 mm long; stigma 0.3–0.4 mm long. Mericarps ovate to broadly ovate, 0.6–0.7 mm long, 0.4–0.5 mm wide, 1.4 times as long as wide; apex acute; outer surface with mostly appressed to slightly ascending microhairs, 0.04–0.1 mm long, flattened, mostly distributed along minute ridges over most of surface and somewhat randomly orientated; commissures with pit to about $\frac{1}{3}$ width of commissure, the pit elliptic, without a food body. **Fig. 1.**

Additional specimens examined: Queensland. COOK DISTRICT: 36.3 km from Dixie Station on track to Killarney, Jun 1989, *Clarkson 8154B & Neldner* (BRI); 13.9 km along Pormpuraaw Road from Gulf Development Road, Nov 2010, *McDonald KRM10093* (BRI); 6 km N of 'Fairview' on the Peninsula Road, Apr 1980, *Clarkson 3090* (BRI); 12.2 km along Pormpuraaw Road from Cape York Development Road junction, Dec 2010, *McDonald KRM10303* (BRI).

Distribution and habitat: *Heliotropium microspermum* is only known from near Musgrave on Cape York Peninsula (**Map 1**). It has been found in woodland of *Melaleuca viridiflora* Sol. ex Gaertn. on flat terrain, and eucalypt woodland dominated by *Eucalyptus tetradonta* F.Muell. or *Corymbia stockeri* subsp. *peninsularis* (K.D.Hill & L.A.S.Johnson) A.R.Bean or *C. nesophila* (Blakely) K.D.Hill & L.A.S.Johnson on granite hills with sandy soil.

Phenology: Flowers and fruits have been recorded in June and November.

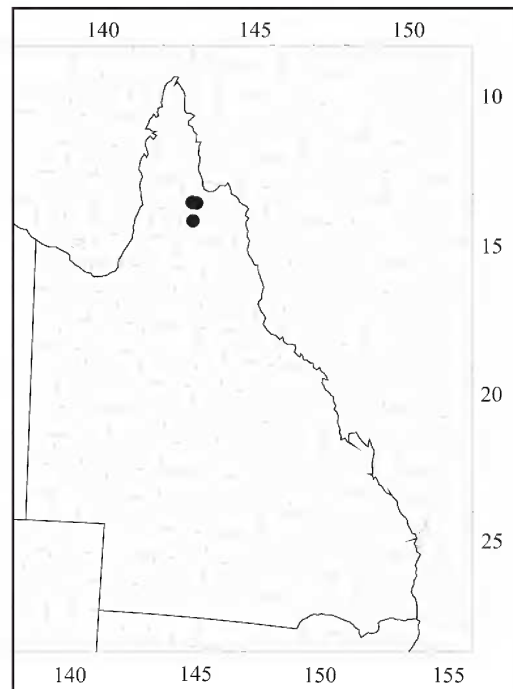
Affinities: *Heliotropium microspermum* is similar to *H. rhadinostachyum* with respect to growth habit, appearance of the cymose inflorescences, and leaf and bract shape, size, and distribution along the branches.

Heliotropium microspermum differs most notably from *H. rhadinostachyum* and *H. cunninghamii* Benth. by the size and shape of the corollas and mericarps, as well as indumentum type and cover (**Table 1**).

Notes: Juvenile leaves of *Heliotropium microspermum* can be larger than adult leaves and therefore more clearly different from the bracts. Juvenile plants of this species may have very short cymes. The corolla of *Heliotropium microspermum* can be a little swollen around the anthers at fruiting.

Conservation status: *Heliotropium microspermum* is only known from near Musgrave. Inappropriate burning regimes present the most significant potential threat to this species. Further field observation is required to determine the species population size and area of extent.

Etymology: The specific epithet is derived from the Greek *micro* (small) and *spermum* (seed) alluding to the relatively small mericarps for this species.



Map 1. Distribution of *Heliotropium microspermum* in Queensland

Table 1. Comparison of morphological characters for *Heliotropium microspermum*, *H. rhadinostachyum* and *H. cunninghamii*

Character State	<i>H. microspermum</i>	<i>H. rhadinostachyum</i>	<i>H. cunninghamii</i>
mericarp length (mm)	0.6–0.7	0.9–1.2	0.6–1.2
mericarp apex shape	acute	rounded	acute
mericarp microhair length (mm)	0.04–0.1	to c. 0.05 or occasionally absent	0.05–0.1
mericarp microhair type	flattened	papillate	circular in cross-section
mericarp microhair distribution	most of surface	upper ⅓	upper ⅓–½
mericarp pit size	small, up to ⅓ width of commissure	large, c. ½ the width of the commissure	small, up ⅓ width of commissure
mericarp pit shape	elliptic	elliptic	circular
mericarp outer surface	minutely ridged over most of surface	mostly smooth, occasionally minutely ridged in upper ½	smooth
corolla length (mm)	2.5–3	3–4	5–6
corolla tube shape at anthesis	cylindrical	swollen around anthers	swollen around anthers
calyx lobe trichome length (mm)	0.5–0.8	0.5–0.8	0.3–0.4
bract length (mm)	2.5–4.5	2–4.5	1–2.5
bract	conspicuous; leaves distinctly different to similar	conspicuous; leaves distinctly different to similar	inconspicuous; leaves distinctly different
bract imbrication	touching to separated by about 1 length	overlapping by ½ a length to separated by up to 2 lengths	widely separated

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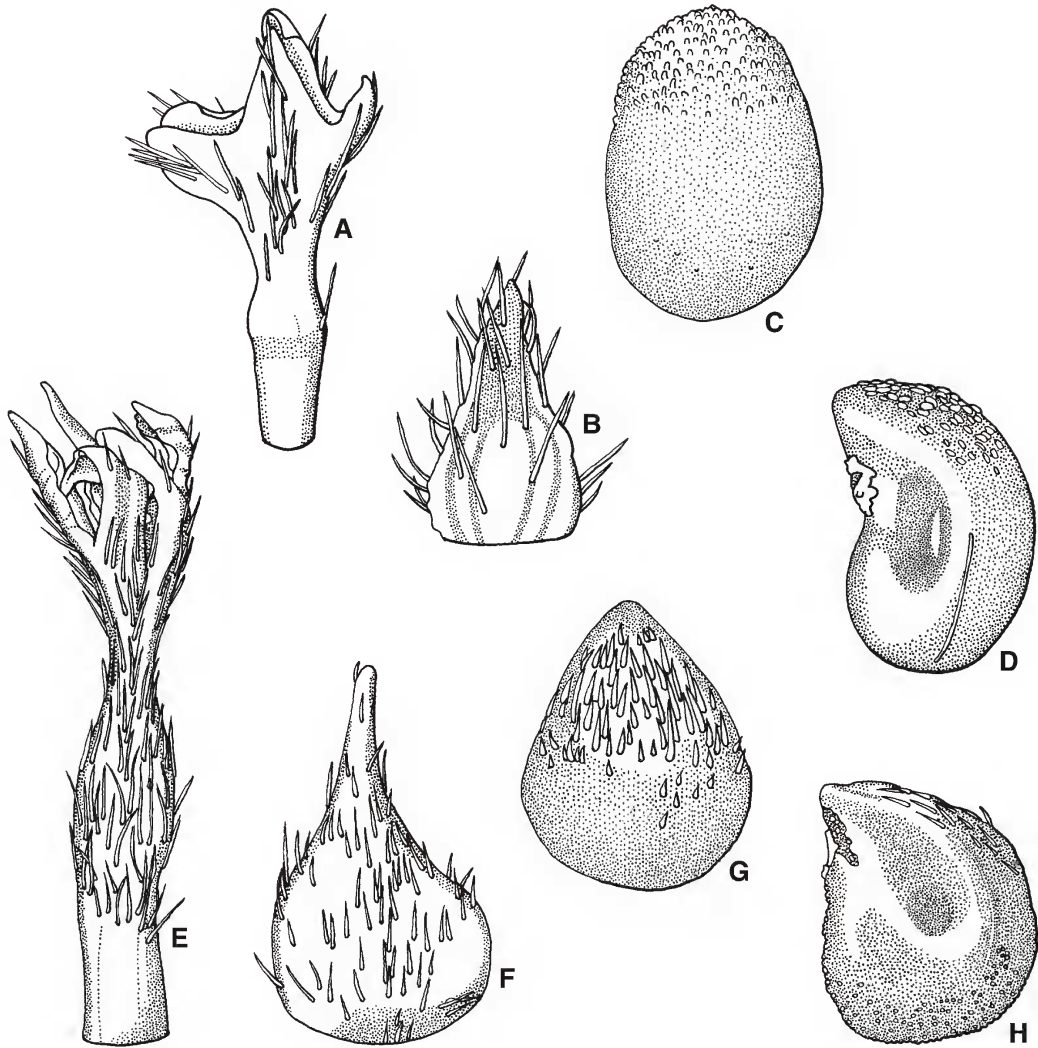


Fig. 2. A–D: *Heliotropium rhadinostachyum*. A. corolla $\times 16$. B. outer calyx lobe $\times 16$. C. mericarp backview $\times 40$. D. mericarp side view $\times 40$. E–H: *Heliotropium cunninghamii*. E. corolla $\times 16$. F. outer calyx lobe $\times 16$. G. mericarp back view $\times 40$. H. mericarp side face $\times 40$. A–D from Clarkson & Neldner 8146 (BRI); E–H from Thompson & Booth TAN239 (BRI). Del. W.Smith.